

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**STRIPCROPPING**

(Ac.)

**CODE 585**

**DEFINITION**

Growing row crops, forages, small grains, or fallow in a systematic arrangement of equal width strips across a field.

**PURPOSE**

- Reduce soil erosion from water and transport of sediment and other water-borne contaminants
- Reduce soil erosion from wind
- Protect growing crops from damage by wind-borne soil particles

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies on cropland or other land where crops are grown.

On sloping cropland and on certain recreation and wildlife land where the topography is uniform enough to permit tilling and harvesting, and where it is an essential part of a cropping system to effectively reduce soil and water losses.

This practice is unsuitable on undulating to rolling topography because of the difficulty of maintaining parallel strip boundaries across the hill slope and/or staying within in-row grade limits. It is most suitable on uniform slopes with slope lengths (L) equal to or less than the Critical Slope Length Limits as determined using the RUSLE2.

The effect on erosion reduction for this practice is reduced on fields where slope lengths (L) exceeds the Critical Slope Length limits for contouring by 1.5 times, unless the slope length (L) is shortened by the installation

of other practices such as terraces.

This practice is most effective on flatter slopes (2-12 percent) but can reduce sheet and rill erosion on steeper slopes. Effectiveness of this practice is a function of soil texture, land slope, effective ridge height, and Cover-Management Condition.

This standard does not apply to situations where alternating strips are not generally equal in width or where the land is treated with Contour Buffer Strips (332).

**CRITERIA**

**General Criteria Applicable To All Purposes**

**Number of Strips.** A stripcropping system shall consist of two or more strips.

**Alignment of Tillage and Planting**

**Operations.** All tillage and planting operations will follow the strip line established.

**Vegetative Cover.** Vegetation in a stripcropping arrangement consists of crops and forages grown in a planned rotation.

No two adjacent strips shall be in an erosion-susceptible condition at the same time during the year. However, two adjacent strips may be in erosion-resistant cover at the same time.

Erosion-resistant strips shall be crops or crop residues that provide the needed protective cover during those periods when erosion is expected to occur.

Acceptable protective cover includes a growing crop, including grasses, legumes, or grass-legume mixtures.

A vegetative cover shall be selected that is tolerant of the anticipated depth of sediment deposition.

When the erosion-resistant strip is in permanent vegetation, the species established shall either be tolerant to herbicides used on the cropped strips or protected from damage by herbicides used on the cropped strips.

**Width of Strips.** The required width of strips shall be determined using currently approved erosion prediction technologies to achieve the planned erosion reduction.

**Additional Criteria To Reduce Soil Erosion From Water and Transport Of Sediment And Other Water-borne Contaminants**

**Alignment of Strips.** Strip boundaries shall run parallel to each other and as close to the contour as practicable.

**Strip Width.** Base strip widths on the planning objective and the approved erosion prediction technology. Erosion-susceptible strip widths shall not exceed that listed in the table below.

% Land Slope	Cropped Strip Width
1-2 %	150 ft
3-5 %	150 ft
6-12 %	120 ft
13-16 %	90 ft
16-20 %	60 ft
> 21 %	60 ft

The erosion-resistant and erosion-susceptible strips shall be of approximately equal width. If a correction strip is required, that strip may vary in width but shall be no narrower than the widest working field implement used to traverse the strip. Cropped strip widths shall be adjusted downward to accommodate equipment widths.

Where field contours become too sharp to keep machinery aligned with the contour during field operations, establish sod turn-strips on sharp ridge points. These strips shall be wide enough to allow the equipment to be lifted and/or turned and meet the same rows across the turn strip.

**Arrangement and Vegetative Condition of Strips.** Strips susceptible to erosion shall be

alternated down the slope with strips of erosion-resistant cover. Erosion-susceptible strips are generally defined as consisting of row crops or fallow. An erosion-resistant strip generally consists of dense grasses and/or legumes, hay crops nearing the end of the first year.

**Minimum Row Grade.** Row grades for soils with slow to very slow infiltration rates (soil hydrologic groups C or D), or for crops sensitive to ponded water conditions for periods of less than 48 hours, shall be designed with positive row drainage of not less than 0.2 percent on slopes where ponding is a concern.

**Maximum Row Grade.** The row grade shall be aligned as closely as possible to the contour to achieve the greatest erosion reduction, but still be practicable to operate equipment.

The maximum grade of rows shall not exceed three percent or 0.50 times the up and down hill slope percent used for erosion prediction, whichever is less.

In-row grade up to five percent is permitted for a maximum of 150 feet as crop rows approach a stable outlet.

When the grade of any contour strip reaches the maximum allowable design grade, a new baseline shall be established up or down slope from the last contour strip and used for the layout of the next contour strip(s). A baseline is a contour line laid out to establish the pattern for adjacent contour strips.

**Minimum Ridge Height.** The ridge height shall be sufficient to reduce soil erosion compared to rows oriented up and down the slope. As a minimum, this practice shall create at least a 0.5 to 2-inch ridge height during the period of the rotation that is most vulnerable to soil erosion. The required ridge height will be determined using on-site conditions and current erosion prediction technology.

The minimum ridge height is not required for strips of close-grown crops, such as small grains or meadow.

The minimum ridge height is not required where the Residue Management, No-till/Strip-Till (329) is used parallel with the strip boundaries if at least 50 percent surface residue is present between the rows after planting.

**Critical Slope Length.** The computation of critical slope length shall be determined using approved water erosion prediction technology.

When stripcropping is applied in conjunction with contour farming, the critical slope length is 1.5 times the critical slope length determined for contour farming.

A stripcropping layout shall not occur on a slope longer than the critical slope length unless supported by other practices that reduce slope length below critical (e.g., diversions, terraces).

**Stable Outlets.** Stable outlets shall be established as necessary where runoff results in concentrated flow erosion. Acceptable stable outlets include grassed waterways, field borders, filter strips, water and sediment control basins, or underground outlets for terraces and diversions.

**Headlands/End Rows.** Establish and maintain field borders in perennial herbaceous vegetative cover when concentrated water flows will develop or where up and down hill farming of end rows will result in a soil loss exceeding tolerable soil loss levels. Field borders shall be sufficient width to accommodate turning farm equipment without additional end rows. Refer to Field Border (386) for installation.

#### **Additional Criteria To Reduce Soil Erosion From Wind**

**Alignment of Strips.** Strip boundaries shall run parallel to each other.

**Orientation and Width of Strips.** Strips shall be oriented as close to perpendicular to the prevailing wind erosion direction as practical.

The width of strips shall be determined using the currently approved wind erosion prediction technology. Calculation shall account for the effects of other practices in the conservation management system.

The effective width of strips shall be measured along the prevailing wind erosion direction for those periods when wind erosion is expected to occur and for which the system is designed.

When the orientation of erosion-susceptible strips deviates from perpendicular to the prevailing wind erosion direction, the width of these strips shall be correspondingly reduced as per direction given in Wind Erosion section of the National Agronomy Manual.

#### **Additional Criteria To Protect Growing Crops From Damage By Wind-borne Soil Particles**

**Alignment of Strips.** Strip boundaries shall run parallel to each other.

**Orientation and Width of Strips.** Strips shall be oriented as close to perpendicular to the prevailing wind erosion direction as practicable.

The effective width shall be measured along the prevailing wind erosion direction during those periods when sensitive crops are susceptible to damage by wind-borne soil particles.

The width of strips shall not exceed the width permitted by the crop tolerance to wind erosion during specific crop stage periods, as specified in the National Agronomy Manual, other accepted technical references, or other planned crop protection objectives.

### **CONSIDERATIONS**

Protect areas of existing or potential concentrated flow erosion with one or more conservation practices such as grassed waterways, field borders, water and sediment control basins, terraces, or diversion terraces.

Design and install the contour strip layout to best facilitate operation of all machinery used on the strips. Whenever possible, layout contour strips to have multiples of full implement widths used for the farming operation and an even number of trips across the field. Where adjustments are required to maintain in-row grade within design limitations, install odd area correction strips. Keep these adjustment areas to a minimum by adjusting the entire field layout.

Remove obstructions or make changes in field boundaries or shape to improve the effectiveness of the practice and the ease of performing farming operations, where feasible and within policy constraints for wetlands, cultural resources, etc.

To begin layout, inspect the field's position on the landscape to find key points for commencing layout or getting a width of one-half strip or more to pass by an obstruction or a ridge saddle. Account for uncropped field roads or similar other features in the layout. See Agronomy Technical Note #16 - Contour Strip-Cropping Planning and Layout Guide.

Where contour strip row curvature becomes too sharp, establish sod turn strips on ridge points. In drainage ways establish grassed waterways for turning as well as protecting soil from erosion due to runoff of concentrated water flow. Turn strips shall be wide enough to allow the equipment to be lifted, turned, and aligned with the same rows across the strip.

Select adapted varieties of perennial crop species for persistence of stands as desired in the planned crop rotation.

Review herbicide program to determine if chemical carryover is a problem for the establishment of small grain or close grown crops such as legumes and grasses.

## PLANS AND SPECIFICATIONS

Specifications for installation and maintenance of Stripcropping shall be prepared for each field or treatment unit according to the Criteria described in this standard.

Specifications shall be recorded on specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

## OPERATION AND MAINTENANCE

Sediment accumulations along strip edges shall be smoothed or removed and distributed over the field as necessary to maintain practice effectiveness.

When headlands are in permanent cover, renovate as needed to keep ground cover above 65 percent. No-till renovation of

headlands is recommended but in any case should only include the immediate seedbed preparation and reseeding to a sod-forming crop with or without a nurse crop. Maintain full headland width to allow turning of farm implements at the end of a tilled strip to double back on the same strip.

Manage perennial crops in rotation using principles contained in Forage Harvest Management (511), Nutrient Management (590), and Pest Management (595) to promote longevity of stands as desired in the planned crop rotation.

Manage pesticide applications to avoid overlap and/or drift onto adjacent rotation hay strips, waterways and turn strips.

Conduct all farming operations parallel to the strip boundaries except on end rows that have gradients flatter than the criteria set forth in this standard.

Plant correction areas as closely as possible to the contour. Using no-till in the correction areas or seeding close-grown crops rather than row crops increases options.

Mow sod turn-strips and grassed waterways at least once a year. Harvesting is optional.

## REFERENCES

The following publications are available at the local NRCS field offices or the Iowa NRCS Home page at: <http://www.ia.nrcs.usda.gov>.

- [Forage Harvest Management, \(511\).](#)
- [Nutrient Management, \(590\).](#)
- [Pest Management, \(585\).](#)
- K. G. Renard, G. R. Foster, G. A. Weesies, K. D. K. McCool and D. C. Yoder. 1997. Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE), Agricultural Handbook Number 703.
- Revised Universal Soil Loss Equation Version 2 (RUSLE2) website: [http://fargo.nserl.purdue.edu/rusle2\\_dataweb/RUSLE2\\_Index.htm](http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm).
- Agronomy Technical Note #16; Contour Strip-Cropping Planning and Layout Guide.